UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,439	06/24/2003	Nicholas Shaylor	SUN03-0096	4380

57960	7590	11/27/2006	

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EXAMINER
RUTTEN, JAMES D

ART UNIT	PAPER NUMBER
2192	

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**
Office Action Summary	10/603,439	SHAYLOR ET AL.
	Examiner	**Art Unit**	
	J. Derek Rutten	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 June 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-34</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-34</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>24 June 2003</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.　　Claims 1-34 have been examined.

Drawings

2.　　The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character not mentioned in the description: 412 (appearing in FIG. 4, in EEPROM 104). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

3.　　35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4.　　Claims 12-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 12 is directed to "a computer-readable storage medium"

which is defined on page 6, paragraph [0026] as including "computer instruction signals

embodied in a transmission medium." However, such signals embodied in a transmission

medium are not considered statutory. Claims that recite nothing but the physical characteristics

of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define

energy or magnetism, per se, and as such are nonstatutory natural phenomena. *O'Reilly, 56 U.S.*

(15 How.) at 112-14. For further information, see "Interim Guidelines for Examination of

Patent Applications for Patent Subject Matter Eligibility", which can be found online at

<http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm>. However, a

magnetic and/or optical storage medium as defined in the specification is considered statutory.

Dependent claims 13-22 do not appear to correct the shortcomings of parent claim 12, and are

rejected for the same reasons.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 1, 2, 6, 7, 12, 13, 17, 18, 23, 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as

being unpatentable over U.S. Patent No. 6,339,841 to Merrick et al. (hereinafter "Merrick") in

view of U.S. Patent No. 5,815,718 to Tock (hereinafter "Tock").

In regard to claim 1, Merrick discloses:

A method for loading classes into memory See column 3 lines 60-64:

> As part of the normal ClassLoading operation, a class is sent over a network in its entirety as a linear sequence of bytes codes 20 forming a ClassFile. During **class loading** the client receives the linear sequence of bytes codes 20 and reconstructs the class structure. [emphasis added]

Also see column 4 lines 33-37:

> Instead of downloading the x.class in its entirety, the modified class loader assumes that the class has been componentised by the post compilation process and attempts to download the x.meta component of the class (step 102).

comprising:

loading class definitions into memory; See column 4 lines 39-42: e.g. "x.meta component **16** is loaded";

wherein the class definitions contain metadata for classes that are currently being loaded into memory ... See column 3 lines 41-44: e.g. "metadata component **16**."

after the class definitions are loaded into memory, loading method code for the classes into memory; See column 4 lines 42-46, e.g. "...a non-loaded method is loaded..."

wherein loading the method code into memory involves using the class definitions to resolve linkages in the method code so that the method code is ready for execution in memory. See column 4 lines 8-9, e.g. "links."

Merrick does not expressly disclose loading *metadata for classes that are already loaded into memory.* However, Tock teaches that classes can be preloaded in read-only memory. See column 3 lines 12-14, e.g. "first address space," and column 5 lines 32-37, e.g. "constant pool." It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Tock's teaching of preloaded classes with Merrick's class definition loading in order to limit the amount of RAM used in a system with minimal secondary storage (See Tock column 2 lines 1-3).

In regard to claim 2, the above rejection of claim 1 is incorporated. Merrick further discloses: *wherein the class definitions are loaded into volatile memory* See column 4 lines 39-42. Note that this loading is done using volatile memory, since non-volatile memory does not support runtime loading. Merrick does not expressly disclose: *the method code is loaded into non-volatile memory.* However, Tock teaches preloading methods in non-volatile memory. See column 4 lines 48-52, e.g. "methods." It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Tock's preloading in order to limit the amount of RAM used in a system with minimal secondary storage (See Tock column 2 lines 1-3).

In regard to claim 6, the above rejection of claim 2 is incorporated. Merrick further discloses: *wherein resolving linkages in the method code involves quickening the method code by resolving symbolic references into either offset-based references or pointer-based references.* See column 4 lines 61-67.

In regard to claim 7, the above rejection of claim 1 is incorporated. Merrick further discloses: *wherein the classes are loaded from a suite file containing the classes* (See column 3 lines 60-66 and FIG. 2 element 20); *and wherein the suite file is organized so that the class definitions for all of the classes in the suite file precede the method code for the classes, thereby facilitating loading the class definitions prior to loading the method code* (see column 4 lines 33-46).

In regard to claim 12, Merrick discloses a computer readable medium (see column 1 lines 48-49, e.g. "memory"). All further limitations have been addressed in the above rejection of claim 1.

In regard to claims 13, 17, and 18, the above rejection of claim 12 is incorporated. All further limitations have been addressed in the above rejection of claims 2, 6, and 7, respectively.

In regard to claim 23, Merrick discloses an apparatus (see FIG. 2 which illustrates a network comprising a client apparatus and a server apparatus. Merrick further discloses a class loading mechanism (see column 2 lines 28-29, e.g. "class loader"). All further limitations have been addressed in the above rejection of claim 1.

In regard to claims 24, 28, and 29, the above rejection of claim 23 is incorporated. All further limitations have been addressed in the above rejection of claims 2, 6, and 7, respectively.

7.   Claims 3-5, 10, 11, 14-16, 21, 22, 25-27, 32, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrick and Tock as applied to claim 2 above, and further in view of "Java Card™ Technology for Smart Cards: Architecture and Programmer's Guide" by Chen (hereinafter "Chen").

In regard to claim 3, the above rejection of claim 2 is incorporated. Merrick further discloses: *using the class definitions to create class data structures for the classes.* See FIG. 2, elements 22, 24, and 26, also column 4 lines 39-42. Merrick and Tock do not expressly disclose creating structures *in non-volatile memory after the method code is*

loaded into non-volatile memory. However, Chen teaches that CAP file contents

(methods) are first written to non-volatile memory, then "links the classes" (creates class

structures). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to use Chen's teaching of linking after loading with Merrick's class

data structures in order to use "postissuance applets" (see Chen section 3.10.3, especially

top of page 47).

In regard to claim 4, the above rejection of claim 3 is incorporated. Merrick

further discloses: *creating one or more jump tables..., wherein the jump tables specify the*

locations of methods See FIG. 2 element 26. Merrick and Tock do not expressly disclose

prior to creating the class data structures in non-volatile memory, the method further

comprises creating <data> *in non-volatile memory.* However, Chen teaches loading a

CAP file prior to linking. It would have been obvious to one of ordinary skill in the art at

the time the invention was made to use Chen's teaching of loading prior to linking with

Merrick's jump tables in order to link postissuance applets (see Chen section 3.10.3,

especially top of page 47).

In regard to claim 5, the above rejection of claim 3 is incorporated. Merrick

teaches that redundant method components may be removed (see column 5 lines 20-22).

Merrick does not expressly disclose: *after the class data structures are created in non-*

volatile memory. However, Chen teaches the use of transient objects in volatile memory

(see section 3.5.3, page 39) and postissuance applets (section 3.10.3). It would have been

obvious to one of ordinary skill in the art at the time the invention was made to use

Chen's teaching of transient objects and postissuance applets with Merrick's disclose of

component removal in order to provide a temporary linking operation for classes (see

Chen page 47).

In regard to claim 10, the above rejection of claim 2 is incorporated. Merrick and

Tock do not expressly disclose: *real class definitions for classes that are currently being*

loaded into non- volatile memory; and proxy class definitions for classes that were

previously loaded into non- volatile memory. However, Chen teaches that currently

loading classes (real class definitions) are linked with preloaded classes (proxy class

definitions) in non-volatile memory. See top of page 47. It would have been obvious to

one of ordinary skill in the art at the time the invention was made to use Chen's teaching

of linking with Merrick's class definitions in order to use classes that reside on the card

(see Chen top of page 47).

In regard to claim 11, the above rejection of claim 2 is incorporated. Merrick and

Tock do not expressly disclose: *wherein the volatile memory is Random Access Memory*

(RAM); and wherein the non-volatile memory is Electrically-Erasable Read-Only

Memory (EEPROM). However, Merrick teaches that RAM is used to execute software.

See column 1 lines 9-24. Further, Chen teaches that EEPROM is used to hold methods.

See section 3.10.2. It would have been obvious to one of ordinary skill in the art at the

time the invention was made to use Merrick's teaching of RAM and Chen's teaching of

EEPROM with Merrick's memory since these types of memory are commonly available

and affordable (Merrick column 1 lines 9-24). Further, EEPROM technology allows

preservation of data (Chen, top of page 38).

In regard to claims 14-16, 21, and 22, the above rejection of claim 13 is incorporated. All further limitations have been addressed in the above rejection of claims 3-5, 10, and 11, respectively.

In regard to claims 25-27, 32 and 33, the above rejection of claim 24 is incorporated. All further limitations have been addressed in the above rejection of claims 3-5, 10, and 11, respectively

In regard to claim 34, Merrick discloses: *A computing device configured to load classes into non-volatile memory, comprising: a computing engine;* See column 1 lines 39-40, e.g. "computing system". All further limitations have been addressed in the above rejection of claims 1-3.

8.   Claims 8, 9, 19, 20, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrick and Tock as applied to claim 2 above, and further in view of "On-Card Bytecode Verification for Java Card" by Leroy.

In regard to claim 8, the above rejection of claim 2 is incorporated. Merrick further discloses: *wherein during the loading of the method code into non-volatile memory, the method code is verified.* See column 2 lines 47-50, e.g. "verification." Merrick and Tock do not expressly disclose: *to ensure that the method code is correct with regards to type safety.* However, Leroy teaches type safety. See top of page 151, e.g. "well typed." It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Leroy's teaching of type safety with Merrick's verification in order to provide applet security (see Leroy, bottom of page 150).

In regard to claim 9, the above rejection of claim 2 is incorporated. Merrick discloses: *wherein after the method Code is loaded into non-volatile memory, the method code is verified* See column 2 lines 47-50. Merrick and Tock do not expressly teach *to ensure that branch targets within the method code are valid.* However, Leroy teaches checking branch instruction targets for validity. See page 151, e.g. "jumping to data." It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Leroy's teaching of branch validity with Merrick's verification in order to provide applet security (see Leroy, bottom of page 150).

In regard to claims 19 and 20, the above rejection of claim 13 is incorporated. All further limitations have been addressed in the above rejection of claims 8 and 9, respectively.

In regard to claims 30 and 31, the above rejection of claim 24 is incorporated. All further limitations have been addressed in the above rejection of claims 8 and 9, respectively.
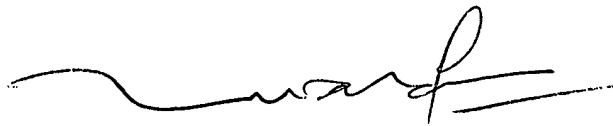
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Derek Rutten whose telephone number is (571)272-3703. The examiner can normally be reached on T-F 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571)272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

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like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jdr

TUAN DAM
SUPERVISORY PATENT EXAMINER